

material positioned at the inlet of the mold through which a protective gas is supplied from channels or gas supply passages 22. The molten metal solidifies at the point denoted by reference numeral 25. The protective gases are supplied to the molten metal prior to solidification in order to prevent discoloration. As previously discussed, the gas does not provide any lubricating effect in the mold. Note that the oil is supplied at solidification point 25 for the purpose of lubricating the mold.

Kittilsen does not disclose the restricting elements between the permeable wall and an interior wall of the mold housing as required in claims 11 and 17. In particular, claim 11 requires, *inter alia*, annuli formed between said permeable wall material and said mold housing to distribute the oil and/or gas to the permeable wall material. Claim 11 further specifies that each of said annuli is divided into a plurality of sectors by restriction members, and each of the sectors is supplied with oil and/or gas via separate supply channels, thereby permitting differentiation of the oil and/or gas around the circumference of the mold.

Foye is applied to teach the “concept” of the differentiating the supply of oil around the circumference of a mold cavity, however this is achieved in a manner that is completely different than the present invention, as claimed in claims 11 and 17. What Foye does teach is supplying different amounts of lubricant at an entry end of the mold (see Fig. 1). Note that the chilled mold section 12 is cooled in various manners that have nothing to do with the lubricant supplied at the entry end of the mold (see col. 2, lines 56- 60). This is similar to Kittilsen, which provides primary and secondary cooling, both of which have nothing to do with the lubricant delivered at the entry end of the mold.

Tarmann discloses a vertical mold, and is also concerned with the delivery of lubricant on the inner surface of the mold. However, the Tarmann device is proposed to ensure that the lubricant is “uniformly” distributed on the inner surface of the mold (see col. 1, lines 7-15). Note that the intended purpose of Tarmann is basically the opposite of the Foye reference.

The Examiner contends that one of ordinary skill in the art would have selectively taken features and teachings from the various references and arrived at a structure that included all of the features recited in claims 11-19, 21, 22 and 25-30. This is in spite of the fact that none of the references disclose the claimed structure, and the modifying references are directed to different types of molds, and are designed to achieve dissimilar results. Furthermore, all of the proposed modifications are irrelevant to providing primary cooling to the metal being cast, as specified in claim 11. Clearly, the only teaching of record, which would result in the invention of claims 11 and claim 17, is Applicants' own specification, which of course is an impermissible use of hindsight.

Clearly the combination proposed by the Examiner would not have rendered obvious Applicants' invention as defined in at least claims 11 and 17.

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Turning to the comments made by the Examiner in the "Response to Arguments" section of the Office Action, Applicants provide the follow responses

1. The Examiner takes the position that "the gas does not further limit the structure of these apparatus claims."

As instructed in MPEP 2143.03 all limitations in a claim must be considered when judging the patentability of that claim against the prior art. Claim 14 requires a gas supply channel communicating with a sector at a location upstream relative to the oil supply channel. This language clearly limits the structure of the apparatus claim, and is unsuggested in the prior art.

2. The Examiner take the position that:

"Foye includes such flow control means (valves) that would readily be used on the separate supplies of oil and gas taught by Kittilsen et al., resulting in controlled ("differentiated") supplies. The Tarmann et al. reference remedies the lack of specificity set forth by Foye (valves), since Tarmann et al. disclose a plurality of plugs or similar restriction members that "differentiate" the supply of oil around the mold cavity."

Applicants concede that the oil and gas supply channels in Kittilsen could be (and likely are) provided with valves to control flow therethrough. However, the teachings of Tarmann are not applicable to the proposed Kittilsen/Foye combination for the reasons set forth above.

3. In responding to the inquiry as to where the claimed annuli in the Kittilsen/Foye combination, the Examiner responds as follows:

"In the 1st paragraph on page 9, the annuli are defined by a lubricating device 23 having upper and lower (sectors) chambers 18,27 (of the annuli) and adjustable valves 17,26 to control the circumferential supply of oil around the mold in the region of the plate element 11."

The reference numerals are presumably to the Foye reference, which was applied for its "concept" of differentiating lubricant around the surface of the mold. However, the chambers of the Foye system are formed by arcuate shaped depressions formed in the end face of the mold. Foye does not have an annulus, and clearly does not have annuli (more than one annulus). Clearly, the Foye reference does not disclose or suggest "annuli" formed between said permeable wall material and said mold housing to distribute the oil and/or gas to the permeable wall material, as required in claim 1.

4. In response to the arguments set forth on pages 9 and 10 of the previous response, the Examiner states that:

"restricting elements (e.g. valves) of Foye enable the mold housing to form a "plurality of sectors". Since the applicants specifically claim a "plurality of sectors" in a physical (structural) sense in the form of "restriction members" and "a plurality of plugs", as set forth in independent claims 11 and 17, respectively, (even though the valves of Foye are deemed to divide the mold into a "plurality of sectors"), the Tarmann et al. reference provides the structural details and motivation for using the "restriction members" and "a plurality of plugs"."

As discussed in detail above (and in the previous response), the Tarmann structure does not permit the oil to be differentiated (varied) around the circumference

of the mold. In fact, it ensures an opposite result, i.e., uniform distribution of lubricant along the inner surface of the mold. Furthermore, Tarmann achieves this result in a vertical mold.

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Further, It is noted that, on pages 2-4 of the Office Action, claims 11, 17 and 25-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 9, 11, 12, 14, 16 and 17 of co-pending application No. 10/009,690 in view of Foye and further in view of Tarmann.

For the reasons discussed in the previous response, and those discussed above, it is submitted that the claims in the present application are clearly not obvious variations of the invention defined in the claims of the co-pending application. Clearly, the Foye and Tarmann references do not teach or suggest the modifications proposed by the Examiner. Further, it is noted that the number of references applied in a rejection is theoretically unlimited when the references are directed to independent features of the claimed invention. However, when a reference is applied to modify a "modifying" reference (as in this case) to provide the features that are not recited in the claims of the co-pending application, it is less likely that motivation exists to make such a modification. In this case, the Examiner is suggesting that Foye, as modified by Tarmann, would result in the claimed invention even though the structures disclosed therein produce opposite results. Clearly, the present claims are not merely obvious variations of the claims in the co-pending application.

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In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

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